



## **H.E.F. CANADA QUARTERLY**

*The Human Ecology Foundation of Canada*

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## THE HUMAN ECOLOGY FOUNDATION OF CANADA

### The H.E.F. Canada Quarterly

The H.E.F. Canada Quarterly is a publication of The Ecology Foundation of Canada, a charitable organization under Canadian Law, operating on a non-profit basis. The Quarterly is for people who are interested in health and its relation to our environment. It deals primarily with research in the field of clinical ecology, and also describes how people have improved their health by changes in habits, diet and environment. As such, it does not offer medical advice, and we urge persons wishing to experiment with changes in their lifestyle to do so with the help and guidance of a knowledgeable physician.

### The Human Ecology Foundation of Canada

One of the purposes of the Human Ecology Foundation is to promote the free exchange of information on the prevention and treatment of ecological illness. People who are ecologically ill are no longer able to adapt well to common exposures in their everyday environment. They may develop a variety of chronic or acute symptoms that are brought on by substances in the air, in food, or in water.

Natural inhalants such as pollens, dust and moulds, and even natural foods may begin to affect people adversely. This aspect of the condition is often referred to as allergy. But the many synthetic chemicals that are now common around us can also cause symptoms, and overexposure to these can trigger ecological illness even in those with no history of allergy or other sensitivity to the environment. Symptoms may be mild and merely annoying, or they may become severe enough to interfere with a person's daily activities, family life and career.

On a local basis, HEF Branches work toward finding sources of chemically less-contaminated food, water, clothing and household furnishings, as well as providing counselling on changes of lifestyle that may alleviate symptoms. The Foundation and all its Branches would like to encourage others to become involved not only in research on the effects of environment on health, but in working toward a healthier, less-polluted environment.

### Subscription and Membership

Membership in the Foundation includes a subscription to The H.E.F. Quarterly, which is produced four times per year. Annual membership and subscription fee \$20.00.

## President's Report

Fellow Members:

Apologies for the delay in the production of this issue. My health is at a low ebb. Energy level, ability to sustain thought processes and the extreme fatigue have affected my very being. At this time I cannot share with you the environmental factors involved, because legal avenues are being pursued.

These past several months have been extremely difficult for me. However I must say 'thank you' to the people who have been patient and supportive.

Your next issue of the Quarterly will be published in February. A new editor has emerged. Welcome to Mary Nelson in Winnipeg and thank you for offering your resources and skills as the editor of the Quarterly. Pesticides, a problem for many, will be one of the features. An exciting announcement will appear outlining a Spring event.

In this issue, phenolic food compounds; essential fatty acids; a report from the 18th Advanced Seminar in Clinical Ecology and an appeal for information are highlighted.

Also included is a request for your immediate co-operation re Patricia Orwens' article.

In closing I wish to assure you that the Human Ecology Foundation is thriving. We may have difficult times but with them we ultimately grow stronger.

Response from members is essential.

Have you contributed a story, poem, hints or an article to the Quarterly? Try it. We'll appreciate it.

Ecologically Yours,

Darlene Koski.



More than 20 years ago,  
Dr. MacIennan and some of his friends  
"took a road less travelled by",  
developed the field of Clinical Ecology,  
and for him, and many of us,  
That has made all the difference.

#### THE ROAD NOT TAKEN

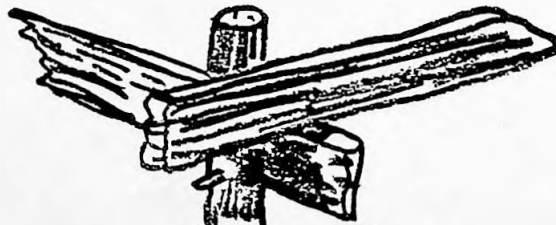
Two roads diverged in a yellow wood,  
And sorry I could not travel both  
And be one traveler, long I stood  
And looked down one as far as I could  
To where it bent in the undergrowth;

Then took the other, as just as fair,  
And having perhaps the better claim,  
Because it was grassy and wanted wear;  
Though as for that the passing there  
Had worn them really about the same,

And both that morning equally lay  
In leaves no step had trodden black.  
Oh, I kept the first for another day!  
Yet knowing how way leads on to way,  
I doubted if I should ever come back.

I shall be telling this with a sigh  
Somewhere ages and ages hence:  
Two roads diverged in a wood, and I-  
I took the one less traveled by,  
And that has made all the difference.

-Robert Frost



REPORT FROM CHICAGO  
by John Blair, M.D.

The 18th Advanced Seminar in Clinical Ecology was held in Chicago October 11-15, 1984. Many of the previous meetings were held in resort settings, so it was quite a change meeting in Chicago. The hotel, staff, and facilities were great, but the location was a flat laceration on the earth between railway tracks and a freeway with no place to go out and walk around. In the foggy distance, a few miles away, we could see the skyscrapers of downtown Chicago. It was a pleasure visiting some famous old hotels, the Art Institute, and a seven storey shopping centre called "Water Tower Place". The hotel van made regular trips to the downtown core, and some of us had hair raising trips back and forth in high speed taxis.

The Society for Clinical Ecology changed it's name to the "American Academy of Environmental Medicine". Now in it's 19th year, there was a joke at the annual banquet about the group going through a late teen identity crises.

It is difficult to make any list of what one learns at these meetings. The main value in the meeting is in rubbing shoulders with other people doing the same type of work all over North America and sometimes other parts of the world. Talking with old and new friends is an injection of enthusiasm for "the cause".

One highlight of the meeting was a speech and slide presentation by Dr. Shih Tae Yeh about Allergy Treatment in China. His work involves gathering pollen, making up some of his own pollen extract, studying pollen samples from the air, doing some provocative testing, and making some "ecological" house calls. He said that there are about 100 other doctors in China sharing many of these approaches.

The first day of the meeting was devoted to discussions about nutrition,--specifically, essential fatty acids, zinc, and magnesium. It is hard for all of us, including the writers of medical textbooks, to keep up to date with the rapidly increasing knowledge in human nutrition and physiology.

Report From Chicago  
(continued)

There were several presentations about yeast overgrowth. Two laboratories in California, and one in Oklahoma, are measuring specific antibodies against *Candida albicans*. Antibody levels are increased when there is a yeast overgrowth, and the antibody levels come down to the normal range with treatment. When these tests become generally available, the diagnosis and treatment of yeast overgrowth will be more scientific, and the concept of yeast related disturbances in humans will be more readily accepted by the medical profession.

The meeting in 1985 will be in Scottsdale, Arizona, and we will all come back wearing turquoise belt buckles and string ties.

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The Sunnyhill Victory

Sunnyhill is set on 25 acres of rolling Ontario countryside northeast of Toronto, and the interior is designed for the least possible indoor air pollution. This super-clean environment will help our 'students' reduce their overall chemical load, and will aid them in determining the role of environment in their lives.



R.R. #1, Goodwood, Ontario, Canada LOC 1A0

Sunnyhill Research Centre, long just a dream, is now a reality. The Centre is only a few months from final completion. Sunnyhill will open in the spring of 1985 with a full-fledged education program for people with complex allergies and chemical susceptibilities.

People in all stages of environmental illness are urged to seek out competent medical care and if necessary to attend one of several hospital environmental units in North America. Sunnyhill is not a medical facility. Rather, our goal here is to provide people with the personal education, training and moral support they will need to improve their health and their tolerance for environmental factors.

Those of our readers who are particularly interested in further details about Sunnyhill education and rehabilitation programs are invited to send a postcard or give us a call.

Bruce and Barbara Small

WHAT'S NEW IN THE PRACTICE OF CLINICAL ECOLOGY  
by Jozef Krop, M.D.

Clinical Ecology (C.E.) as any other new specialty in medicine, will and should undergo the stress of criticism due to the pressure from basic science in physiology, biophysics and physics alone to establish well grounded roots in medicine. At the present time there is more research being done; more double blind studies performed proving to the medical establishment that the C.E. methods of diagnosing and treating patients are a valid, scientifically grounded way to solve the problems of many people. Diagnostic methods such as the intradermal serial dilution titrations, sublingual provocation and neutralization as well as intranasal challenge testing (INCT) used by the Clinical Ecologists are the most valuable and informative procedures both for the patient and the doctor.

Considering that our total environment is becoming more polluted and the social complexity of our lives is less tolerable, most the the Clinical Ecologists are treating more and more patients who suffer from the total overload that is placed on their systems from the environment. The ecological management as a result is very difficult to implement. As time goes on we will all continue to treat patients who are very sick.

To diagnose and treat the patient properly, we need to perform ecological testing. Some of the testing methods are sometimes quite unpleasant for the patient as well as for the doctor. All the methods are extremely time consuming particularly for patients whose ecological illness is quite advanced and the reactions to antigens quite severe.

Looking for easier, faster and safer methods, particularly for those very sick patients, to establish their neutralizing doses, led me to study the methods of bio-energetic regulatory techniques (B.E.R.). These

What's New In The Practice Of Clinical Ecology  
(continued)

methods are conceptually in line with the modern scientific thinking in terms of quantum physics. The technique was developed out of the principles of electro-accupuncture and testing tolerance for different medications or allergens. There are many electronic machines on the market utilizing those techniques, such as the Vega Test 11, a German made electronic machine.

This machine measures the effect of ultra fine electro-magnetic energy (radiation) of tested antigens on the patient's electromagnetic field alternating the body's hydrogen ions concentration or Ph. Using the Vega Test 11 equipment, the tester can use three different accupuncture points: allergy point, triple warmer, or connective tissue point.

Using this electronic instrument enables one to find the neutralizing doses much faster and safer, particularly for those brittle patients whose testing was always very prolonged and sometimes impossible to perform in the office because of the severity of stimulated reactions.

Some of the ecological patients do not respond as favourably to ecological management as others. No matter how well the therapy is followed; the patient is strictly following the ecological principles including the four day rotation and elimination diet, the elimination and desensitization for chemicals, desensitization for inhalants, the therapy is not working; he/she is not responding well enough or not responding at all.

The lack of response to ecological therapy led one of our colleagues Dr. Robert Gardner from Brigham Young University in Provo Utah, who was an ecological failure in his sickness, to discover and establish the concept of phenolic food compounds (P.F.C.'s). These aromatic compounds are naturally occurring chemicals that are



What's New In The Practice Of Clinical Ecology  
(continued)

present in all foods, pollens, weeds, grasses, tree terpenes and moulds. They are secondary ingredients of the plants and animals food in contrast to the primary ingredients like proteins, fats, carbohydrates, minerals and vitamins.

PFC's colour, flavour and preserve foods in a natural way. They protect plants and animals against fungus, bacterial and viral infections. They help in the dispersal and germination of seeds and attract by their fragrances, flower pollinators. They potentiate human and animal responses to neurotransmitters. Many PFC's are present in all biological food families, therefore, it is impossible to omit them from the diet and rotation may not serve the purpose. You can observe from the attached chart just how widespread the PFC's are distributed in foods.

If the patient is sensitive to the PFC's he must be desensitized for them. For the last one and one half years in our office we have tested patients sublingually but because of the tremendous time-consuming process and the much stronger systemic reactions we have switched and for the past nine months have used electronic testing for some patients. We test and treat those patients for PFC's who have lost a considerable amount of weight, need to be on a strict yeast free diet, are sensitive to many foods, particularly those foods which they have never had in their lives before. Patients who remark that they feel far better if they don't eat at all, are usually PFC sensitive.

We use the slow desensitization methods, particularly for the brittle patients. We have to retest the patient every month and build his/her tolerance slowly until he/she is able to tolerate the strongest dilution; No. 1 with the dilution factor of 1:5. During the slow desensitization the patient uses 2 drops three times a

What's New In The Practice Of Clinical Ecology  
(continued)

day, after meals. Once he/she reaches the number one dilution, he/she only needs to take two drops three times a week.

Some patients are able to tolerate the rapid neutralization method which utilizes a different principle of the dilution method; eg. geometrical dilutions as opposed to the arithemetical dilutions used in the slow neutralization or regular serial dilution titration testing where the dilution factor is 1:5. Rapid neutralization allows us to neutralize the patient in 7 to 10 minutes with one antigen and enables him/her to take the 1% solution right away after leaving the office. Using the rapid desensitization method the patient takes three drops three times per day for two weeks; three drops once per day for four weeks; three drops once per week for one year.

In our practice as well as through communications with other centres in Arizona, Utah and California, we can state that some patients (not all) respond more favourably to our total ecological management if they are desensitized to PFC's. It may well be that the use of PFC's as an extra tool may be used to solve some of the problems of the patients whose regular ecological management of rotation and elimination, desensitization for chemicals and inhalants, as well as a change of lifestyle did not bring satisfactory results.

Nevertheless, I would like to caution all patients not to look at PFC desensitization as a panacea which will give everyone a release from suffering. Still the basic principles of Clinical Ecology "to decrease the total load" through the cleaning of the home environment from chemicals, elimination and rotation of organic foods, exercise, positive thinking and coping skills, and the ability to change a lifestyle are the most important and valuable approaches to Clinical Ecology Management.

## HUMOUR HELPS

Our greatest gift is the gift of laughter  
We laugh before we learn to walk or talk.



A beautiful person is more beautiful  
when they are laughing.

Some people are real comforters  
Others are just wet blankets



My doctor put me back on my feet  
When I got the bill I had to sell my car.

2 goats went into a movie theatre and ate 3 cans of film  
One goat said to the other: "I liked the book better."

A duck, a frog and a skunk went to the circus.  
Tickets were \$1.00. Who got in and who didn't?  
The duck got in because he had a bill.

The frog got in because he had a green back.

But the poor skunk didn't get in because he had  
only a scent and it was a bad one at that.

I'd cut out those pills if I were you,  
They might be habit forming.  
"Nonsense, I've been taking them for 15 years."



ESSENTIAL FATTY ACIDS  
by John Blair, M.D.

A fatty acid is a molecule composed of a chain of carbon atoms. Branching out from the carbon atoms are atoms of hydrogen and oxygen. One end of the chain is attracted to water and the other end of the chain is repelled by water. Two rows of these chains, side by side, form cell membranes. The outside of the membrane and the side facing into the cell are attracted to water. Inside the membrane are the ends of the fatty acid chains that repel water. This gives each cell a waterproof membrane. Some of the fatty acids that make up the membranes are used to make hormone-like compounds called prostaglandins.

Essential fatty acids are special molecules that the human body cannot make. We must have them in order to live, therefore we must get these from the food we eat. There are two essential fatty acids, *cis* LINOLEIC ACID, and alpha LINOLENIC ACID.

Sources of Essential Fatty Acids

*cis* LINOLEIC ACID  
(omega 6 family)

sunflower oil  
safflower oil  
corn oil  
cottonseed oil  
peanut oil  
soybean oil  
liver, kidneys,  
sweetbreads (pancreas)  
lean meat  
legumes  
evening primrose oil  
    "Efamol",  
    "Naudicelle"

alpha LINOLENIC ACID  
(omega 3 family)

cold water fish such as  
    trout, salmon, mackerel,  
    haddock, herring.  
cod liver oil  
dark green leafy vegetables  
    such as spinach  
linseed (flaxseed) oil  
    linseed also contains  
    some *cis* linoleic acid  
marine lipid concentrate  
    brand name "MaxEPA"

### Essential Fatty Acids (continued)

A deficiency of essential fatty acids may result in a number of problems: hair loss, dry skin, dermatitis, eczema, increased permeability of cell membranes and increased water loss through the skin, often associated with increased thirst. poor wound healing, failure of normal growth, failure to reproduce, (problems in male and female) dry eyes and mouth, faulty immune function.

A deficiency of essential fatty acids should be unusual. All we apparently need is an essential fatty acid intake of up to 5% of the total caloric requirement. This is apparently obtained in the diet in all but the most extraordinary circumstances.

However, there can be some problems. The essential fatty acids are often destroyed when food is processed. Heat and sometimes chemicals are used to extract oils from plants and seeds. This destroys some of the essential fatty acids. Adding hydrogen atoms (hydrogenation) also destroys essential fatty acids. Any essential fatty acids left in the oils may be destroyed when the oils are used in cooking.

### TRANS FATTY ACIDS

When oils are processed in the usual way commercially, some of the essential fatty acids are converted into biologically inactive TRANS fatty acids. "Trans" refers to an abnormal shape of the molecule. Trans fatty acids interfere with the normal processing of essential fatty acids in the body and lead to a relative deficiency of the products of essential fatty acids. The abnormal trans fatty acids get incorporated into cell membranes and the cell membranes become more rigid. The full significance of the trans fatty acids is not clear, but humans have been getting more and more of these in the past 50 years. Autopsy studies have shown that up to 15% of tissue fatty acids are in the trans shape.

### Essential Fatty Acids (continued)

Processed foods contain a variable percentage of essential fatty acids in the abnormal "trans" shape.

Sweets	up to 38.6 %
Bakery products	38.5 %
French fries	37.4 %
Vegetable oil cooking fats	37.3 %
Hard margerines	36 %
Soft margerines	21.3 %
Diet margerines	17.9 %
Vegetable oils	13.7 %

### COLD PRESSED OILS

Look for the words "cold pressed" when buying oils. A little more care has been taken to protect the essential fatty acids and to prevent the production of trans fatty acids. These oils can be taken directly by the teaspoon or tablespoon, put on salads and vegetables, or blended with butter. A cup of butter blended with  $\frac{2}{3}$  cup of sunflower or safflower oil stays just the right texture when kept in the refrigerator. A little linseed oil in place of some of the sunflower or safflower would not be noticed, and would then provide both essential fatty acid families in one mixture.

Oils with unsaturated fatty acids tend to go rancid. This is the process of oxidation. Unless you are quickly using up the bottles of cold pressed oils, then keep them in the refrigerator after they have been opened. Oxidation may be further delayed by adding the contents of a 400 unit capsule of vitamin E to each bottle.

Linseed oil is not normally considered as a food, but it contains both essential fatty acid families, especially the alpha linolenic acid family. Use the "Hain" brand of cold pressed Linseed oil. There is not much taste unless it is rancid. Linseed oil can be taken in a dosage of  $\frac{1}{2}$  teaspoonful daily, gradually increased up to 2-3 tablespoonfuls daily, as necessary, and as tolerated.

## Essential Fatty Acids (continued)

You can react to oils just like any other foods. If you tend to develop a lot of food sensitivities, then it is better if you rotate different oils rather than having the same oil day after day. Cottonseed oil may have higher levels of contaminants and pesticides than other oils.

### EVENING PRIMROSE OIL

The evening primrose is a plant whose bright yellow flowers open in the evening. It is a wild flower but is now being grown commercially for its' seeds which contain cis LINOLEIC ACID, and more importantly, gamma LINOLENIC ACID. By taking gamma Linolenic acid directly, we bypass the sometimes difficult first step in the processing of cis Linoleic acid. Gamma linolenic acid is 10 times more biologically effective than linoleic acid. The two brand names for primrose oil capsules are EFAMOL and NAUDICELLE. The only other readily available source of gamma linolenic acid is human breast milk. This is one more important reason for breast feeding in the first several months of life.

### PROSTAGLANDINS

Prostaglandins are biologically active hormone-like compounds produced in all tissues of the body. They are very potent and they take part in all types of body functions. They influence blood clotting, calibre of the blood vessels, calibre of the airways, inflammation, contraction of the uterus, blood pressure, muscle activity in the gastrointestinal tract, acid production in the stomach, emotions, mood, and behaviour.

Prostaglandins are made in the body from essential fatty acids. Any imbalance in essential fatty acid intake or utilization may cause an imbalance in prostaglandin function. Various prostaglandins have opposite effects

### Essential Fatty Acids (continued)

and the net result of the opposing effects may be good or bad. For example, some prostaglandins encourage blood clotting, and some prostaglandins discourage blood clotting. Some prostaglandins constrict the airways resulting in wheezing, and some prostaglandins open up the airways.

Prostaglandin E 1 is made from cis Linoleic acid and from gamma linolenic acid as in breast milk and evening primrose oil. It has a number of desirable effects:

- dilation of blood vessels
- lowering of elevated blood pressure
- inhibition of platelet aggregation (blood clotting)
- inhibition of cholesterol synthesis
- inhibition of inflammation
- stimulation of T lymphocytes which regulate immune function
- normal production of tears and saliva

Prostaglandin E 2 is also derived from cis linoleic acid. Production of this is normally blocked by Prostaglandin E 1. Prostaglandin E 2 has some effects which can be undesirable including promotion of inflammation in joints, and overly strong contractions of the uterus as in menstrual cramps. Aspirin, Indocid, Ponstan, and other non-steroidal (non-cortisone) anti-inflammatory drugs relieve these symptoms by blocking the production of Prostaglandin E 2. The actual problem may be partly due to a relative deficiency in the production of Prostaglandin E 1.

LEUKOTRIENES are a group of compounds that used to be called the "slow reacting substance of anaphylaxis". These compounds are 100-1000 times more potent than histamine or prostaglandins as constrictors of the airways. Any imbalance in essential fatty acid metabolism that leads to excessive production of leukotrienes is clearly a problem, especially if you tend to wheeze. Chronic urticaria (hives) may also be a result of such an imbalance.



### Essential Fatty Acids (continued)

Alpha LINOLENIC ACID is processed with the same enzymes that process the cis linoleic acid. One derivative is EICOSAPENTAENOIC ACID (EPA). (ei cos a pen taen oic) acid. This gives rise to the 3rd series of prostaglandins. These prostaglandins counteract prostaglandin E 2. The release of free arachidonic acid is inhibited, and there is less production of prostaglandin E 2, and Thromboxin 3 which promotes blood clotting. Longer chain fatty acids are also produced including DOCOSAHEXANOIC ACID (DHA). (do cos a hex an oic) acid. The Eskimos with very large intakes of alpha linolenic acid, EPA, and DHA from marine oils have a very low incidence of heart disease in spite of their high fat diets. These essential fatty acids lower cholesterol and triglycerides, and also lower elevated blood pressure.

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### TEN COMMITMENTS OF ECOLOGICAL LIVING

1. I will ask myself every day, "What did I do today?"
2. I will set aside a regular time and place to relax each day.
3. I will praise myself for my successes.
4. I will provide the necessary physical, social and emotional needs for myself.
5. I will be a good listener and more tolerant of others.
6. I will teach others about ecological wellness.
7. I will help myself to realize that living can be fun.
8. I will stay on my rotation diet.
9. I will rid my environment of as many chemicals as possible.
10. I will accept my limitations and adapt my lifestyle.

Essential Fatty Acids  
(continued)

SIMPLIFIED METABOLIC PATHWAY FOR CIS LINOLEIC ACID

cis LINOLEIC ACID

↓  
ENZYME delta-6-desaturase  
(assisted by zinc, magnesium,  
vitamin B6, biotin)

This step is blocked or less efficient in the presence of:

- foods rich in saturated fats
- foods rich in cholesterol
- foods rich in trans fatty acids
- alcohol in larger amounts
- diabetes mellitus
- aging
- some viral infections
- chemical carcinogens
- ionizing radiation
- deficiency of zinc, magnesium, B6
- atopy (allergic tendencies)

↓  
gamma LINOLENIC ACID (as in evening primrose oil and breast milk)

↓  
dihomo gamma LINOLENIC ACID —————→ Prostaglandin E 1  
(assisted by  
Vitamin C % B3)

↓  
ARACHIDONIC ACID (in cell membranes)

Blocked by cortisone and Prostaglandin E 1

↓  
Free ARACHIDONIC ACID —————→ Prostaglandin E 2  
(Enzyme-Cyclo-oxygenase)  
Blocked by aspirin and non-steroidal  
anti-inflammatory drugs

↓  
Enzyme-Lipoxygenase (Blocked by Vitamin E  
and an acid made from  
dihomogammalinolenic acid)

↓  
LEUKOTRIENES

## Essential Fatty Acids (continued)

### SPECIFIC PROBLEMS THAT MAY RESPOND TO ESSENTIAL FATTY ACIDS

#### Skin, Hair, Nails

Essential fatty acids are needed for healthy skin, hair, and nails. Dry skin, "chicken" skin on cheeks, upper arms and thighs, dry straw-like hair, and brittle nails may improve with supplements of essential fatty acids. Eczema may also respond.

#### Allergic Disorders

People with atopic or allergic tendencies do not always process essential fatty acids in an efficient way. Supplements of partially processed essential fatty acids, as in evening primrose oil, are helpful in some allergic disorders such as eczema and asthma.

#### Cystic Fibrosis

People with cystic fibrosis may not be processing essential fatty acids in an efficient way because of problems with delta 6 desaturase enzyme. They too may benefit from taking supplements of essential fatty acids including evening primrose oil.

#### Hyperactivity

Hyperactive children who also have allergies may not be processing essential fatty acids efficiently. Some food additives that aggravate hyperactivity can interfere with the production of prostaglandin E 1 from essential fatty acids. Evening primrose oil may help but the dosage may be critical. This may range from one capsule daily for a child under 2 years of age up to 6 capsules daily for a child over 7 years of age. Vitamin and mineral supplements may be helpful. Remember, this is not the approach you start with: first use the basic principles--simple plain unprocessed natural foods, and look for specific food, chemical, and inhalant sensitivities.

## Essential Fatty Acids (continued)

### Dry Mouth, and Dry Eyes

Reduced production of tears and saliva (sicca syndrome), may respond to evening primrose oil in a dosage up to 6 capsules daily. Vitamin and mineral supplements may be necessary.

### Immune Deficiency or Dysfunction

Prostaglandin E 1 from essential fatty acids stimulates T lymphocytes which regulate the immune system.

### Peripheral Vascular Spasm

Spasm of peripheral blood vessels as in Raynaud's phenomenon may respond to supplements of essential fatty acids including evening primrose oil.

### Inflammatory Disorders

Inappropriate inflammation as in arthritis may improve with supplements of essential fatty acids. Prostaglandin E 1 blocks the production of Prostaglandin E 2 series which promotes inflammation. Prostaglandin E 1 also blocks the release of destructive lysosomal enzymes in the inflammatory process.

### Premenstrual Syndrome

Many women with premenstrual symptoms--breast tenderness, fluid retention, mood changes, anxiety, depression, irritability, and headaches, may improve with evening primrose oil. The dosage is 2 capsules 2-3 times daily starting a few days before the premenstrual symptoms start, and continuing until the menstrual flow starts. If there is any aggravation of symptoms during the menstrual flow it might also be necessary to use supplements of alpha linolenic acid as in linseed oil and marine oils. Other supplements may also be useful including vitamins B6, B3, C, magnesium, and zinc. Remember, premenstrual symptoms are bound to be worse if you are out of balance from food and chemical problems, and inhalant allergies.

## Essential Fatty Acids (continued)

### Cardiovascular Problems

Essential fatty acids are precursors of prostaglandins lower cholesterol levels, lower triglyceride levels, lower elevated blood pressure, and reduce the tendency for platelet aggregation (blood clotting).

### Multiple Sclerosis

This is a complicated group of diseases of multiple causes. Part of the trouble may be a deficiency of essential fatty acids, and supplements of essential fatty acids may reduce frequency and severity of relapses. Essential fatty acids as precursors of prostaglandin E 1 stimulate T lymphocytes which regulate the immune system. The T lymphocytes may prevent or reduce any immune damage of the nervous system. A diet low in animal fats is coupled with the supplements of essential fatty acids. It is still necessary to look for any susceptibility to foods, chemicals, and inhalant allergens such as mold. Yeast overgrowth must be brought under control.

### Benign Breast Disease

This has many names including cystic mastitis, and mammary dysplasia. Lumpy tender breasts may improve with evening primrose oil. Prostaglandin E 1 may block increased levels of the hormone prolactin, or make breast tissue less sensitive to this hormone. Methylxanthines (caffeine, theophylline) in coffee, tea, cola drinks, and chocolate increase breast tissue sensitivity to prolactin, so these foods have to be restricted. Remember, see your doctor about any breast lumps, especially solitary painless lumps.

### FURTHER NOTES

All of us must be able to process the two basic essential fatty acids cis linoleic acid and alpha linolenic

### Essential Fatty Acids (continued)

acid. The first step is the rate limiting or more difficult step with the enzyme delta 6 desaturase. We have to have enough complementary nutrients for the fatty acids to be processed in the normal way. These nutrients include vitamins B6, B3, and C, and the minerals magnesium and zinc. The optimum amounts of these nutrients is not clear, and it will vary from individual to individual.

A wide variety of simple plain unprocessed foods including nuts, seeds, fish, and some raw vegetables and greens should provide enough essential fatty acids for most people. The cheapest way of taking extra essential fatty acids is to incorporate cold pressed vegetable and seed oils into the diet. Cod liver oil is another cheap source of essential fatty acids but just those in the alpha linolenic acid family.

You will process the essential fatty acids more efficiently if you avoid a lot of processed foods with trans fatty acids, and if you avoid a lot of saturated animal fats. Vitamin and mineral supplements may also help you process essential fatty acids more efficiently.

For those of us who are not good at processing essential fatty acids, usually because of a partial blockage of the delta 6 desaturase enzyme, it may be necessary to use natural sources of partly processed essential fatty acids as in evening primrose oil, (Efamol, and Naudicelle), and as in marine lipid concentrate (MaxEPA).

### RECOMMENDED READING

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